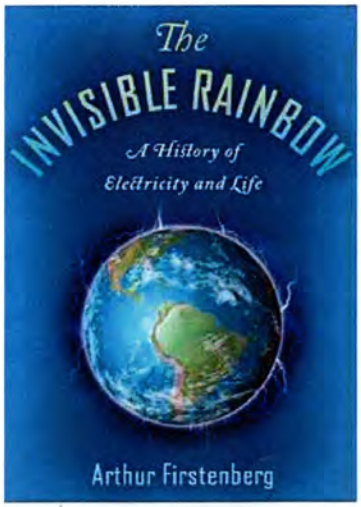


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The Invisible Rainbow: A History of Electricity and Life

by

Arthur Firstenberg

Translation of the French summary authored by Sosthène Berger, Dipl-Ing
L'arc-en-ciel invisible - Une histoire de l'électricité et de la vie
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1 Introduction

1.1 About the author

Arthur Firstenberg is a scientist and journalist who is at the forefront of a global movement to tear down the taboo surrounding this subject. After graduating Phi Beta Kappa from Cornell University with a degree in mathematics, he attended the University of California, Irvine School of Medicine from 1978 to 1982. Injury by X-ray overdose cut short his medical career. For the past thirty-seven years he has been a researcher, consultant, and lecturer on the health and environmental effects of electromagnetic radiation, as well as a practitioner of several healing arts.

1.2 About the Book

This remarkably well-documented and -referenced book is a cornerstone in the sense that it traces the deployment of electricity in our civilization, in terms of its interaction with living organisms, from its initial discovery in the 1740s all the way to our time, and even projected into the future. It should be noted that the title refers to the entire electromagnetic spectrum comprising the colors of the rainbow, including the invisible frequencies such as radio frequencies and the fields generated around conducting wires.

Part 1 *From the very beginning ...*

1. Captured in a Bottle

1746 saw the first discoveries involving electricity in Europe. Leyden's experiment consisted of revealing the *electric fluid* by means of rubbing the hand on a glass globe spun rapidly on its axis. The static electricity thus produced made a great impression in the schools, fairs and on private persons who had the financial means to acquire this device, with some producing electrical arcs and others brief electric shocks. The phenomenon was so popular that it was not socially acceptable to suggest that electricity could be dangerous, even though the shocks caused headaches, nosebleeds and fatigue in certain experimenters and in the animals used in the tests. Society was taken over by *electromania* and the most fervent exponents of being electroshocked in good company between two glasses of champagne began to perceive harmful symptoms. In spite of this, the medical establishments equipped themselves with the Leyden flask (the forerunner of the condenser), for the purpose of carrying out medical experiments for abortions or other applications.

In this way a completely new field of knowledge emerged concerning the biological effects of electricity on people, plants and animals – knowledge that was then much more extensive than that of our contemporary physicians, who daily see patients suffering from the effects of electricity without recognizing them for what they are, and who are generally ignorant of the very existence of this knowledge.

2. The Deaf to Hear, and the Lame to Walk

Noting the – rarely positive, and far more often negative – effects of the application of electrical voltage on living organisms, the researchers and physicians concluded that living organisms function in conjunction with electricity. Certain cures were brought about using

electricity – as for example in 1851, when the neurologist Duchenne treated deafness in dozens of patients by means of locally applied electrical impulses. Experiments were carried out – notably by Volta in Italy, as well as other researchers in the western world – which found evidence that the nervous, cardiac, cardiovascular, gustatory, sudatory and other systems could be stimulated using the electricity produced by galvanic couples. It was found that the number of curative effects were significantly fewer than the harmful effects that were listed, which include the symptoms of electro-sensitivity (ES) known today, such as headaches, dizziness, nausea, mental confusion, fatigue, depression, insomnia, etc.

3. Electrical Sensitivity

The French botanist Thomas-François Dalibard – who carried out electrical experiments on living organisms – confided in a letter to Benjamin Franklin dated 1762 that he was unable to continue his work as his own organism had developed an intolerance to electricity. He was one of the first people to be officially declared electro-hypersensitive (EHS). Reading that account, it is clear that this botanist must have been severely affected. Other professors and researchers had the same unfortunate experience and were thus forced to stop their work. Even the famous Benjamin Franklin was affected by a neurological illness during his researches on electricity from 1753 onwards, and the symptoms are largely reminiscent of electro-hypersensitivity. So much so that, at the end of the 18th century, it was generally acknowledged that electricity could make people ill, depending on the sex, the morphology and the physical condition of the individual concerned. It had similarly been observed that certain individuals reacted strongly to changes in the weather, which often correlated with electrical changes in the atmosphere. The names of some of those individuals are still famous today – among them Christopher Columbus, Dante, Charles Darwin, Benjamin Franklin, Goethe, Victor Hugo, Leonardo da Vinci, Martin Luther, Michelangelo, Mozart, Napoleon, Rousseau and Voltaire.

4. The Road Not Taken

During the 1790s, science was faced with an identity crisis regarding the interpretation and unification of the four different fluids – electricity, light, magnetism and heat. Where electricity was concerned, on the one hand there was Luigi Galvani, who regarded electricity as an integral part of the living organism, and on the other Volta's theory that electricity was only a "secondary" effect of internal chemical reactions in the living organism. Volta, the inventor of the extremely useful electric battery, which had the potential to become a great money-spinner, succeeded in winning the argument against the more global view of the interaction between electricity and the living organism.

5. Chronic Electrical Illness

From the end of the 19th century onwards, urban landscapes were transformed by the installation of telegraph lines throughout the industrialized countries. This technology used voltages of the order of 80 volts on a single conductor, with the return current being earthed.

That period saw the emergence of the first stray currents to which living beings were exposed. It was then that one saw the appearance of *diseases of civilization* such as *neurasthenia*, which afflicted Frank Lloyd Wright and Theodore Roosevelt, among other well-known figures. It should be noted in passing that neurasthenia is very similar to electro-

hypersensitivity, which is the more modern term for the same sensitivity to electricity. Around half of the telegraphists who were employed to manipulate the electrical current sent through the lines, and were thus exposed to very strong electromagnetic fields, were afflicted by *telegraphic sickness*. Once again, the symptoms were the same as those of EHS. Later on, in around 1915, it was the telephone operators who were experiencing the same symptoms – for they were exposed to electromagnetic fields from the communications for hours on end at their desks. In 1989, it was noted that in Winnipeg 47% of the telephone operators were suffering from the same symptoms.

However, in 1894, the noted Viennese psychiatrist Sigmund Freud wrote an article whose effect was disastrous for all the unfortunates who suffered from telegraphic sickness, neurasthenia, microwave syndrome or EHS. Rather than seeing the external cause – which was electromagnetic pollution – he attributed these symptoms to disordered thoughts or poorly controlled emotions. As a result, today millions of citizens affected by electronic smog are being medicated instead of reducing their exposure to this pollutant. Sigmund Freud renamed neurasthenia – which was known to be caused by electricity – as a *neurosis anxiety*, an *anxiety attack* or a *panic attack*. This opened the way for the reckless deployment of electrification to continue unimpeded.

It should be noted that in Russia, neurasthenia is listed as an environmental illness, as Freud's damaging redefinition was rejected there.

6. The Behavior of Plants

Sir Jagadis Chunder Bose and other researchers conducted numerous electrical experiments on plants and other living organisms, whose results showed definite effects. He discovered that the nerves of plants or animals display variable behavior and that their resistivity can vary considerably, depending on the application of the current and its polarity. He also noted that the intensity of current necessary to modify the conductivity of the nerves is infinitesimal in terms of the voltage applied – something in the order of 0.3 microamperes ($0.3*10^{-6}$). That current is significantly less than the current that is induced through a telephone conversation using a cell phone. Bose likewise discovered that the threshold of a current's bioactivity is 1 femtoampere ($1*10^{-15}$)! As this researcher was also familiar with radio-frequency transmissions, he carried out an experiment in which a plant was exposed to a radio signal of 30 MHz at a distance of about 218 yards (200 meters) and found that the plant's growth was retarded during the emission period. He likewise showed that the circulation of sap in the plant slowed down when it was irradiated by the same radio signal.

7. Acute Electrical Illness

During the 1880s, London was supplied with direct current, but certain physicists had discovered that the distribution of alternating current generated fewer ohmic losses in the wires. There followed a *battle of the currents*, even though many scientists, including Edison, strongly criticized the more dangerous effects of alternating current. Ironically, it's precisely because alternating current is more harmful that it is used in the electric chair. And as everyone knows, the electrical current of the power grid is... alternating!

In 1889, full-scale electrification was carried out in the USA and, shortly thereafter, in Europe. That same year, as if by chance, doctors were inundated with cases of flu, which

had until then appeared only infrequently. The victims' symptoms were far more neurological in nature, resembling neurasthenia, and did not include respiratory disorders. The pandemic lasted for four years and killed at least a million people.

In 2001, Canadian astronomer Ken Tapping showed that the influenza pandemics over the previous three centuries correlated with peaks in solar magnetic activity, on an 11-year cycle. It has also been found that some outbreaks of influenza spread over enormous areas in just a few days – a fact that is difficult to explain by contagion from one person to another. Also, numerous experiments seeking to prove direct contagion through close contact, droplets of mucus or other processes have proved fruitless.

From 1933 to the present day, virologists have been unable to present any experimental study proving that influenza spreads through normal contact between people. All attempts to do so have met with failure.

8. Mystery on the Isle of Wight

In 1904, bees began to die on the Isle of Wight following the installation of radio transmitters by Marconi. These transmitters work at frequencies close to megahertz levels.

On the other side of the Channel, Jacques-Arsène d'Arsonval showed that "sharp and hooked" electromagnetic signals are far more toxic than sinusoidal signals.

The truth was that, after a year and a half of experimenting with radio transmitters in full health at the age of 22, Marconi began to develop fevers. These attacks continued for the rest of his life. In 1904, while working on setting up a transmitter powerful enough for transatlantic communications, these fevers became so intense that they were thought to be malaria. In 1905, he married Beatrice O'Brien and after their honeymoon, they settled on the island close to a transmitter. As soon as Beatrice had settled in, she began to complain of tinnitus. After three months, she fell ill with severe jaundice. She had to return to London to give birth to a baby who only lived for a few weeks and died of "unknown causes." During the same period, Marconi spent several months suffering from fever and delirium. Between 1918 and 1921, he suffered suicidal depression while working on a shortwave transmitter. In 1927, while on his honeymoon from his second marriage, he collapsed with chest pain and was diagnosed with serious cardiac disorders. Between 1934 and 1937, while he was developing microwave technology, he had nine heart attacks – the final one killing him at the age of 63.

On the same island, at Osborne House, Queen Victoria suffered cerebral hemorrhages and died on the evening of January 22nd 1901, just as Marconi was putting a new transmitter into operation less than 13 miles away.

In 1901 there were "only" two transmitters, while in 1904 there were four, making this island the most irradiated place on the planet, leaving bees no room for survival. In 1906, a survey revealed that 90% of the bees had completely disappeared for no apparent reason. New colonies were brought to the island, but these likewise died within a week.

This epidemic spread across England and then across the western world, and then gradually stabilized, until the armies equipped themselves with various high-powered radio transmitters towards the end of the First World War – triggering (as we have seen) the

Spanish flu pandemic in 1918, which actually began in the United States, at the Naval Radio School of Cambridge, Massachusetts, with 400 initial cases. This epidemic rapidly spread to 1,127 soldiers at Funston Camp (Kansas), where wireless connections had been installed. What intrigued the doctors was that while 15% of the civilian population were suffering from nosebleeds, 40% of the Navy suffered from them. Other bleeding also occurred, and a third of those who died did so due to internal hemorrhaging of the lungs or brain. In fact, it was the composition of the blood that had been altered, as the measured coagulation time was more than twice as long as normal. These symptoms are incompatible with the effects of the influenza respiratory viruses, but totally consistent with the devastating effects of electricity. Another incongruity was that two-thirds of the victims were healthy young people. A further atypical flu symptom was that the pulse slowed to rates of between 36 and 48, whereas this is a common result of exposure to electromagnetic fields. In addition, it was possible to successfully treat some sufferers with massive doses of calcium.

The military physician Dr George A. Soper testified that the virus was spreading faster than the speed of movement of people. Various experiments were conducted attempting to infect subjects either by direct close contact or by inoculation with mucus or blood – but the experimenters were unable to demonstrate any infection by this means.

It can be seen that each new influenza pandemic corresponds to a new advance in electrical technology, such as the Asian flu of 1957-58, following the installation of a powerful radar surveillance system, and the outbreak of Hong Kong flu from July 1968 onwards, following the commissioning of 28 military satellites for space surveillance at the altitude of the Van Allen belts, which protect us from cosmic radiation.

9. Earth's Electric Envelope

With a core consisting mainly of iron, the rotating earth is primarily protected by the ionosphere, then the plasma sphere – delimited by the Van Allen radiation belts at an altitude of between 1,000 and 55,000 km – and by its tail: the magnetosphere, which is exposed to solar winds originating from our sun and constitutes a kind of dynamo, a complex electrical system. The exchanges of electricity between the earth's crust, the atmosphere and even the ionosphere are permanent and constant. They are in a delicate balance, and a kind of electrical "respiration" of the entire system has allowed life to develop on our planet, which is charged with negative ions, balanced by the positively charged ionosphere. An average vertical electrical field of the order of 130 volts per meter can be observed, with values that can, for example, rise to 4,000 volts per meter during storms. In 1953, one of the primary parameters of this electrical oscillation of our environment was discovered, in the form of (Winfried) Schumann's frequencies, which "respire" at 7.83 hertz, with harmonics at 14, 20, 26, 32 Hz, called *very low frequencies* (VLF).

It is no wonder that the organisms living in this environment are imbued with these physical values and that, for example, our brain rhythms lie within these frequency ranges – such as the alpha rhythm, which lies between 8 and 13 Hz. While we perceive the visible frequencies – ranging from blue to red – of the electromagnetic spectrum, some animals are able to see other electromagnetic frequencies – such as bees, which can see ultraviolet frequencies, or those salamanders or catfish which can see the low electrical frequencies, while snakes are able to see the infrared frequencies.

Laboratory experiments on hamsters, for example, showed that reducing the temperature and shortening the duration of daylight was not enough to put them into hibernation. Similarly, hamsters raised in Faraday cages refused to hibernate, even though the light and temperature parameters corresponded to those of winter, until the Faraday protection was removed. Other experiments were conducted, such as that carried out at the Max Plank Institute in 1967 by the physiologist Rütger Wever, using two buried rooms without windows or outside contact – one shielded from natural electromagnetic fields, the other one not. It was shown that in the shielded chamber, the circadian rhythms of the volunteers became desynchronized and could vary between 12 and 65 hours, accompanied by metabolic disorders, while the subjects in the chamber immersed in the earth's fields kept a coherent rhythm of around 24 hours and their metabolism continued to function more normally. It has been scientifically demonstrated that a living organism needs to be bathed in the electromagnetic system of our natural environment in order to function well.

Moreover acupuncture, the ancient method used in Traditional Chinese Medicine, works by using our own electrical properties and modifying the energy flow of the meridians. It has been known for some time (since the 1950s) that these meridians actually correspond to electrical circuits and that the Chinese Qi corresponds to the concept of electricity. These meridians serve dual functions: they not only transport information and energy internally from one organ of the body to another, but also serve as antennas for picking up the flow of environmental electromagnetic energy.

In the early 1970s, atmospheric physicists discovered that the earth's magnetic field was significantly disturbed by human electrical activity. By injecting a signal into space and capturing its echo, it was established that the initial signal had in fact been modified by multiples of the 60 Hz power grid used in North America.

However, this discovery did not prevent the HAARP project from being launched to deliberately modify the electromagnetic properties of our planet.

Similarly, the Van Allen belts that protect us from cosmic rays have already been altered by our electrical activity – and it may be that these double belts were originally only a single belt which, under the influence of the human emission of electric charges into space, has been depleted at its centre.

Satellite observations show that the radiation emitted by high voltage lines often has the effect of suppressing the natural radiation of lightning.

In light of this fact, it is logical to conclude that the influenza pandemics of recent decades are linked to human electrical activity.

10. Porphyrins and the Basis of Life

Any transformation of energy in the biological domain involves porphyrins [pigments made up of four pyrrole molecules]. The fact that our nerves are able to function properly is thanks in part to porphyrins, which play a role in our cell processes. These are special molecules that function as the interface between oxygen and life. These molecules are highly reactive and interact with toxic metals or synthetic elements derived from oil, and with electromagnetic fields – which, in excess, cause porphyria, which is more an environmental sensitivity than a disease.

Dr. William E. Morton's research showed that 90% of people with multiple chemical sensitivity (MCS) are deficient in one form of porphyrin enzyme or another, as are electro-hypersensitive individuals – which means that the two forms of sensitivity are only different manifestations, with one and the same cause. Porphyria, which was discovered in 1891, afflicts about 10% of today's population and first appeared at the same time as the general electrification of the western world from 1889 onwards.

Porphyrins are central to the effects of electronic smog, because they not only cause EHS, MCS or porphyria, but also cardiovascular diseases, cancer and diabetes, as they are involved in a multitude of energetic biological processes.

In the 1960s, the biologists Allan Frey and Wlodzimierz Sedlak showed that our organisms definitely have a bioelectronic component, and that some of our cells sometimes behave like conductors or capacitors or semi-conductors (transistors), like the components that we find in our electronic devices. This is the case with myelin – the sheath that covers our nerves – which contains porphyrin bonded to zinc. Should environmental poisons such as chemical products or toxic metals affect this equilibrium, the myelin sheath will be damaged, which alters the excitability of the nerves it surrounds. The entire nervous system then becomes hyperresponsive to stimuli of all kinds, such as electromagnetic fields. The system enters a state of divergent instability, the effect becoming the cause.

Contrary to the view that mitochondria are the elements of our cells that produce energy, the concept of the myelin sheath as being one giant mitochondrion is beginning to gain credence.

The connection between porphyria and zinc was discovered in the 1950s by Henry Peters, at Wisconsin Medical School. Patients suffering from porphyria and neurological symptoms were excreting a great deal of zinc in their urine, which led him to the idea that zinc chelation might improve their condition. He did indeed see an improvement, despite the widespread belief that zinc deficiency is related to those specific disorders. Similarly, certain experiments have shown that zinc chelation improves Alzheimer's disease. An Australian medical team demonstrated in autopsies that the brains of patients with Alzheimer's disease contained twice as much zinc as those of healthy patients.

Part 2 *...to the present day*

11. Irritable Heart

In 1980, cardiac arrest in young athletes was rare, with only nine cases a year. From then on, cases steadily increased by 10% per year until 1996, when the rate suddenly doubled to 64 cases, rising to 66 in the following year and 76 in the last year of the study. The American medical community could find no explanation for this, while in Europe in 2002, German environmental physicians launched an appeal calling for a moratorium on antennas and cell towers, as the waves they were emitting were causing cardiovascular disorders. That was the Freiburg Appeal.

Dr. Samuel Milham, an epidemiologist at the Washington State Department of Health, showed through his work that cardiovascular disease, diabetes, and cancer are largely, if not entirely, caused by electricity.

Paradoxically, studies of cholesterol dating from the early 20th century did not show that cholesterol levels correlated with a higher risk of heart disease – contrary to what is commonly regarded as fact nowadays. A study of animals at the Philadelphia Zoo showed that from 1916 to 1964, cholesterol levels in mammals and birds increased by a factor of between 10 and 20 even though their diet had remained completely unchanged! The only parameter that had dramatically changed was the increase in radio frequencies.

During the Second World War, a number of soldiers complained of symptoms similar to those of neurasthenia. It was initially believed, in accordance with Freud's doctrine, that these soldiers were suffering from anxiety problems: however, a study of 144 cases was then conducted by Dr. Mandel Cohen. This study revealed that the soldiers were in fact physiologically less resistant and suffered from irritable heart. They had difficulty in assimilating oxygen and had to breathe twice as fast as their comrades in better health in order to get enough oxygen. It emerged that their mitochondria were not functioning efficiently. In the end, the study showed that these soldiers were hypersensitive in a general sense, but particularly to electricity.

From the 1950s onwards, scientists in the Soviet Union also observed that radio frequencies altered the electrocardiograms of individuals exposed to them, as they modified mitochondrial efficiency.

Graphs showing the statistics for death rates from heart disease broken down by the degree of electrification of the American states in 1931 and 1940 are also very explicit and leave no doubt as to the toxicity of electromagnetic fields for the heart, thus exonerating cholesterol and diets deemed too high in fat.

12. The Transformation of Diabetes

Thomas Edison, who was involved in discoveries relating to electrical technology and was therefore exposed to electromagnetic fields to a far greater extent than his fellow citizens of the time, was diagnosed with diabetes – a disease that was very rare in 1889. Another researcher, Alexander Graham Bell, who worked in the field of telegraphy and invented the telephone, was known to constantly complain of the symptoms of neurasthenia, known as EHS today. In 1915, he too was diagnosed with diabetes.

In 1876, the book *Diseases of Modern Life* by Ward Richardson described diabetes as a rare modern disease caused by mental exhaustion due to overwork or by a shock to the nervous system.

The excessive intake of toxic, addictive sugar in our modern diet naturally provides a convenient explanation of why diabetes, including prediabetes, affects more than half of all Americans today. However, this explanation is too simplistic.

Dr. Even Joslin showed that between 1900 and 1917, sugar intake had increased by 17% while mortality from diabetes had doubled. Later, in 1987, a study of Native Americans showed radically different rates of death from diabetes, depending on territory, ranging from 7 per thousand in the North-West to 380 per thousand in Arizona! During those years, neither lifestyle nor diet could explain such a divergence. One environmental factor, however, can indeed explain such a difference: the electrification of Native American reservations proceeded at different paces, and those in the North-West were only electrified

much later. By contrast, the Arizona reservation lies in the immediate vicinity of Phoenix. Moreover, this Native American community had its own power plant and its own telecommunications system.

Another example is the population of Brazil – a major sugar producer for centuries, where diabetes was still unknown in 1870, after it had already emerged as a *disease of civilization* in North America. Even today, Brazilians consume 70 kg of refined sugar per year and per person – more than North Americans: and yet they still have two and a half times fewer cases of diabetes than the USA.

In Bhutan, diabetes was virtually non-existent until 2002, after which the electrification of the country began. In 2004, 634 new cases of diabetes were announced, in 2005 – 944, in 2006 – 1,470, and in 2007 – 2,540, with 15 deaths. In 2012, there were 91 deaths and diabetes was the eighth leading cause of death in the country, even though people's diet had not changed!

As we saw in the previous chapter, electronic smog acting on mitochondria prevents the efficient use of absorbed sugar – i.e. the combustion of sugar. The sugar which cannot be converted into mechanical energy is stored as fat by the body.

Statistical graphs for diabetes death rates, broken down by the degree of electrification of the American states in 1931 and 1940, are also very explicit and leave no doubt as to the role played by electromagnetic fields in the appearance of large-scale diabetes, thus exonerating sugar consumption to some extent.

In 1997, there was a 31% increase in the number of cases of diabetes in the United States in a single year, which precisely correlated with the mass introduction of cell phones in the country.

13. Cancer and the Starvation of Life

In February 2011, the Supreme Court of Italy accused Cardinal Roberto Tucci, the outgoing president of Vatican Radio, of having created a public nuisance by polluting the environment with radio frequencies through negligence. In fact, in the period from 1997 to 2003, the children living within a 12 km radius of the radio antennas had an eight times higher rate of leukemia, lymphomas or myelomas than those who lived further away. The same held true for adults, with a rate seven times higher.

The German doctor and professor Otto Heinrich Warburg, winner of the Nobel Prize for Medicine in 1931, showed that cancer is a regression of oxygen-deprived cells, which drives them to multiply anarchically, as in a primeval world where oxygen was not present to the extent that it is today. The initial oxygen deprivation is due to a malfunction of the mitochondria – which, as we have seen, can be caused by electromagnetic fields or other pollutants, such as smoke, pesticides, food additives and air pollution. The same principle of cellular oxygen deficiency applies to diabetes, which is why there is a higher rate of cancers among diabetics than in the rest of the population.

At Philadelphia Zoo, from 1901 to 1955, a rise in the rate of malignant tumors was noted in mammals, varying from twice to 22 times more between those dates.

Cancer death statistics show a clear correlation between the electrification of countries and cancer rates. For example, in the USA, the rate was 6.6 per thousand from 1841 to 1850. It subsequently more than doubled from 1851 to 1860, with a rate of 14 per thousand. The true explanation for this can be found in the mass deployment of the telegraph in 1854.

In 1914, there were two deaths from cancer among the 63,000 Native Americans living in reserves without electrification, while in the rest of the country the cancer mortality rate was 25 times higher.

Between 1920 and 1921, following the introduction of the first AM radio stations, cancer mortality increased by between 3 and 10% in western countries.

The Swedish researchers Olle Johansson and Orjan Hallberg have shown a clear correlation between breast, prostate and lung cancer rates and the exposure of the population to radio frequencies. They point to a significant increase in rates in 1920, 1955, 1969 and a decrease (!) in 1978, corresponding respectively to the increase in radio frequency smog due to the introduction of AM radio, FM radio and TV1, the arrival of color TV2, and then the cessation of AM radio broadcasts. These same researchers have likewise found a very clear linear correlation between the number of FM radio transmitters per region and the incidence of melanomas, with the exposed locations having 11 times more melanomas than the "white zones". They also found that melanomas rarely appear on those areas of the body most exposed to the sun, such as the forehead, nose, shoulders and feet, but more often in those areas of the body usually protected from the sun. Moreover, the proliferation of skin cancers occurred before the coming into fashion of seaside holidays, during which sun exposure is intense. This shows that melanomas are not predominantly caused by the sun, but by radio frequencies.

The statistical graphs of death rates from cancer, as well as from diabetes and cardiovascular diseases, broken down by the degree of electrification of American states in 1931 and 1940, are likewise very explicit, leaving no doubt whatever that electromagnetic fields play a role in the increase in cancers.

Genuine data on brain tumors is hard to find, as the cell phone lobby has been infiltrating this field for decades in order to commission biased studies. One of their studies even shows a decrease in the incidence of tumors, correlating with the intensive use of cell phones! However, the University of Calgary has found evidence of a 30% increase in the incidence of malignant brain tumors in the period from 2012 to 2013, and Lennart Hardell, Professor of Oncology at the University Hospital of Örebro in Sweden, has demonstrated that 2,000 hours of cell phone use increases the risk of developing a tumor by a factor of between three and eight, depending on the age of the subject and their phone habits.

In 2000, Neil Cherry analyzed the cancer rates of children in San Francisco in relation to the distance between their home and the television and FM radio transmitters on Sutro Tower. Children living on hills or ridges were more affected. Those who lived within 1 km of the antenna had a 9 times higher incidence of leukemia, a 15 times higher incidence of lymphoma and a 31 times higher incidence of brain cancer — overall, an 18 times higher rate than those living outside that 1 km radius.

14. Suspended Animation

A Practical Treatise on Nervous Exhaustion (1880) by George Miller Beard, the electrotherapist and friend of Thomas Edison, contains an intriguing observation: *Although these difficulties are not directly fatal, and so do not appear in the mortality tables; although, on the contrary, they may tend to prolong life and to protect the system against febrile and inflammatory disease, yet the degree of suffering they cause is enormous.* Those who suffered the most seemed rather young for their age. Furthermore, Beard noted that one rare disease seemed more likely to afflict the neurasthenic subjects than the rest of the population: that disease was diabetes. Beard had already observed that the increase in life expectancy did not go hand in hand with life quality. The mysterious correlation between the sufferings of neurasthenic people – whose symptoms were the same as those of contemporary electro-hypersensitive people – and the prolongation of their lives pointed to a major dysfunction.

In addition, it has long been observed that an ascetic lifestyle with a low-calorie diet can increase life expectancy and health. This is the case, for example, with the population of Okinawa, where the number of centenarians is forty times greater than those in the population of richer prefectures further to the north.

Researchers in the field of ageing have pointed out that the force that drives and sustains our lives is the system of electron transport in the mitochondria of our cells. It is here that the air we breathe and the food we eat are combined, at a rate that determines our rate of ageing and hence our life expectancy. Whereas the achievement of a slowing down of the combustion process within our cells through moderating the amount of energy delivered may be beneficial, another way of slowing down may conversely be disastrous. This is the poisoning of the electron transport chain. One possible way of being poisoned is chronic exposure to artificial electromagnetic fields. This ever-increasing pollution subjects the electrons of our mitochondria to external forces, slowing them down, depriving our cells of oxygen and causing EHS symptoms.

15. You mean you can hear electricity?

In 1962, a woman contacted the University of Santa Barbara (CA, USA) asking for help in finding the source of the mysterious sound that she was hearing everywhere at home, even though she lived in a quiet residential district. This sound was keeping her awake and was detrimental to her health. Measurements did indeed show that particularly strong electromagnetic fields were emanating from all electrical conductors, not only from the grid but also from the radiators and other metallic elements, yet the stethoscope itself detected no sound at all.

The engineer carried out an experiment, recording the measured fields on tape and playing them to the woman affected by these noises. She confirmed that that was what she was hearing. So, this woman was able to hear the electromagnetic fields in her environment. Grounding facilities and electronic filters were installed to reduce disturbances to an acceptable level.

However, long before that, Volta and other researchers had already conducted experiments in which they had successfully produced various sounds by applying voltage to

the ears. Much later, in the late 1960s, the biologist Allan Frey published articles on the ability of some subjects to hear emissions from a radar installation.

The mechanical model of the functioning of the ear as taught in schools does not provide any explanation for these observed phenomena. Noting this, the biochemist Lionel Naftalin developed a new model of the functioning of the human ear, taking into account the well-known phenomenon of piezo-electricity (a force utilized by electronicians), which he discovered in the gel covering the cilia of the inner ear. In this gel, which is found nowhere else in the human body and has special electrical properties, a voltage of 100 to 120 millivolts was present – which is considered high in the field of bioelectronics. This piezo-electric gel transforms sound waves into an electrical signal that is communicated to the cilia of the inner ear. This new, revised model of the functioning of the human ear not only explains the ability of certain subjects to hear an electromagnetic signal under certain conditions, but also why so modern-day people suffer from tinnitus, and why certain groups of people, amounting to 2 to 11% of the world's population, are hearing a global humming all around the planet.

Today, about 44% of American adults suffer from tinnitus at various levels of intensity, while in Sweden the number of young people affected was 12% in 1997 and 42% in 2006. These parasitic sounds are largely the result of living in an environment that is heavily polluted with all kinds of artificial electromagnetic fields.

16. Bees, Birds, Trees, and Humans

Alfonso Balmori Marinez, a Spanish biologist, has correlated the population density of sparrows with the radio-frequency radiation values in their habitats. Sparrows cannot survive in the most irradiated places, where levels exceed 3 V/m, whereas there are still 42 birds per hectare at levels of 0.1 V/m. He has also observed a marked change in the behavior of storks, whereby stork pairs will fight instead of building the nest or incubating the eggs if they are within 200m of a cell tower.

The United Kingdom classed the house sparrow as an endangered species after its population declined by 75% between 1994 and 2002 – a period that coincided with the deployment of cell phone technology.

Homing pigeon breeders on several continents have found that, when released, up to 90% of pigeons fail to find their way back to the dovecote, whereas this percentage should normally be tiny. In 2000, English breeders tried to reroute a race so as to avoid cell towers, in order to give the pigeons a better chance of homing successfully. In 2004, those same breeders commissioned more extensive studies on the impact of microwaves on pigeons.

In 2002, the US National Park Service issued a note to biologists studying wild animal behavior, explaining that RFID chips attached to those animals to track them with radio frequencies can radically alter their behavior due to the radio frequencies generated.

In environments polluted by electromagnetic fields, robins cannot find their bearings for migration – whereas when they are in a Faraday cage, they are able to do so.

An experiment on frog tadpoles reared in two separate pools within 140m of a cell tower, one without and the other with electromagnetic shielding, displayed mortality rates of 90% and 4% respectively.

The same type of harmful effects are found in insects when they are exposed to the electronic smog that we encounter on a daily basis, and Dr. Panagopoulous, who has experimented on fruit flies, reports that exposure to microwaves at common levels – even for just a few minutes a day for a few days – is the worst known stressor in our daily lives, even worse than chemicals or low-frequency electromagnetic fields.

Bees are also being negatively impacted, as we saw on the Isle of Wight at the beginning of this summary. Dr. Daniel Favre (Switzerland) has demonstrated that in the presence of microwaves, bees emit the sound typically heard when they swarm, which suggests that the insects want to escape the emission source. The varroa mite is generally blamed for colony collapse syndrome; however, we forget that this mite has cohabited with bees for a long time. In addition, it can often be observed that nowadays even a dead colony is not infested with parasites, even though this used to be the case "before". The finger of blame is also levelled at pesticides – yet, as we have seen, 90% of the bees on the Isle of Wight disappeared without any pesticides having been used in that area. The true cause of colony collapse is found in human-generated electromagnetic fields, especially cell phone technology.

In the 1980s, a burning issue emerged: the death of forests. This was blamed on acid rain – yet the most remote areas with the cleanest air were equally affected. Research was carried out in Germany and Switzerland, and although the soil in the affected forests did indeed prove to be acidic, observation and experimentation showed that such acidity could also be the result of the slow electrolysis of the soil via trees exposed to radar waves, for example. Moreover, trees on ridges were more severely affected as they were more exposed to the new radars installed in the 1970s.

Another observation was made at the time of the fall of the Berlin Wall. The gigantic Russian radars at Skruda, which were heavily irradiating the whole region in their task of monitoring the West, had not only caused harm to the forest, but also to animals and human beings. After numerous studies, it was found that the growth rings of the trees during the years when the radars were operating were much smaller than those from either before or after that period.

In Schwarzenburg in Switzerland, a shortwave radio antenna was installed in 1939, and the transmission power was subsequently increased to 450 kW in 1954. This was followed by a deterioration in the health of the local inhabitants, who complained of EHS symptoms. The village children had difficulties at school and seemed unable to advance to higher education, unlike the children of less exposed neighboring villages. Finally, in 1992, a study was carried out which confirmed that, within a radius of 900m of the antenna, the physiological analysis parameters of the people and animals at the site were abnormal. It was also found that the tree growth rings were compressed – but only on the side facing the radiation source. On March 28th 1998, the transmitter was shut down and a "before-and-after" study was carried out; this demonstrated that the melatonin levels of the 58 subjects tested had increased again. A 50-year-old villager was finally able to sleep for a full night without interruption for the first time in his life. On May 29th 1996, Philippe Roch, Director of

the Office for the Environment, stated that there was "a proven correlation between the sleep disorders and communications operations".

17. In the Country of the Blind

How much longer do we have to wait before being able to say "Your cell phone is killing me!" rather than "I'm electro-hypersensitive"? And yet the number of people suffering from headaches due to using cell phones is huge. In 2010, two-thirds of Ukrainian university students interviewed admitted the fact that it is not socially acceptable to openly discuss this issue. Gro Harlem Brundtland was EHS when she was head of the World Health Organization. She was quite open about the fact, but was forced to resign from her post one year later. This deterred other high-ranking public figures from following her example.

Only a minority of people suffering from electromagnetic pollution know what they are suffering from, while the great majority have no idea. The entire population is being electrocuted by remote control and one almost has to apologize for being electro-sensitive or, to be precise, electro-hypersensitive, just as if one had to apologize for being "cyanide-hypersensitive". For the truth is that electricity, as it is currently being used, is toxic. Moreover, statistical graphs clearly show an increase in the mortality rate of the inhabitants of nine American cities shortly after the first base stations were put into operation. This increased mortality ranges from 25 to over 80%.

A survey conducted by a daily newspaper, which asked New Yorkers to report whether they had begun suffering from a number of EHS symptoms after November 15th, 1996, gathered hundreds of testimonies from a wide range of racial and social classes. The date in question was the day when the first cell phone network went into operation.

The Cellular Phone Task Force, an organization started by Arthur Firstenberg in 1996, is inundated with requests for help from people harmed by microwave radio frequencies. So many emitters of all kinds proliferate – from WiFi, WiMAX, radar stations and irradiation emitted from the sky by telecommunications satellites, that it seems as if soon there will be nowhere to escape to.

Prof. Olle Johansson of the prestigious Karolinska Institute, who is famous for awarding the Nobel Prize for Medicine, has focused on demonstrating the effects of electronic smog on living organisms since 1977. The success of his studies led to his being marginalized at his institute, the funding for his research disappearing and to his receiving death threats; on one occasion, he narrowly escaped an attempt on his life through the sabotage of his motorcycle. Despite everything, he continues to inform the world of the truth in order to defend, among others, those suffering from EHS, whose lives have become hell on earth. He is disgusted by the way in which the governments of so-called "democratic" countries have simply abandoned the victims of radio frequencies to their fate.

Dr Erica Mallery-Blythe, who has dual British and American nationality, completed her studies in 1998. In 2007, after following her F-16 pilot husband to the USA, she became severely affected by EHS without realizing it. Her internet researches finally enabled her to understand what was happening to her. As a doctor, she was puzzled as to how such a profound and disabling condition could exist without her ever having heard of it in her profession. To set her mind at rest, she decided to undergo an MRI to rule out the risk of brain cancer. She believed that her death was imminent when the high frequency pulsations

were engaged, but recovered full health and vitality in Death Valley, far from radio frequencies. Since then, she has dedicated herself to informing and helping the 5% (at least) of the population who are EHS and have been totally abandoned by the authorities.

Yury Grigoriev, who is generally regarded as the grandfather of electromagnetic research in Russia, is extremely concerned about young people above all, and has stated that this is the first time in the history of humanity that people's brains are being openly exposed to microwaves – which is extremely serious in the eyes of a radiobiologist. In particular, he cites a Korean study which shows that attention deficit hyperactivity disorder (ADHD) in children is connected to the use of cell phones.

In the late 1990s, the Swedish neurosurgeon Leif Salford and his team proved that cell phones make the blood-brain barrier permeable, causing Alzheimer's disease. In 2003 they showed that a single exposure of only two hours causes permanent damage to the brain.

In 2015, Turkish scientists irradiated rats for an hour a day for a month, using typical cell phone waves. The irradiated rats had 10% fewer brain cells than those that had been spared that treatment. The same team experimented on pregnant rats for 9 days at the same radiation level. The rats' progeny showed degeneration of the brain, spinal cord, heart, kidneys, liver, spleen, thymus and testicles. The same experiment repeated on young rats caused atrophy of the spinal cord together with decreased myelin, like that seen in multiple sclerosis.

In September 1998, the first 66 satellites for space telephony went into operation, causing an increase in the USA's national mortality rate of nearly 5% in the two subsequent weeks. During the same period, it was observed that birds were no longer flying and that EHS people became particularly ill. Today, about 1,100 artificial satellites fly over us, but several companies – Google, Facebook, SpaceX, OneWeb and Samsung – are planning to launch up to 4,600 new communications satellites *each* by 2020, in order to blanket the entire planet with high-speed Internet access.

In 1968, even the first small fleet of 28 military satellites precipitated a worldwide flu pandemic. Unlike a ground-based antenna, whose radiation is highly attenuated when it reaches the magnetosphere, satellites act directly on it through mechanisms that are still poorly understood, thus compromising life on earth. We forget the warnings of Ross Adey, the grandfather of bioelectromagnetics, and of the atmospheric physicist Neil Cherry, that we are electrically regulated by the world surrounding us and that the safe level of exposure to radiofrequencies is therefore zero. This potentially catastrophic initiative must be opposed and the organization leading the way is the Global Union Against Radiation Deployment from Space (GUARDS; www.stopglobalwifi.org/).

In 2014, the physician Tetsuharu Shinjyo published a "before-and-after" study. He evaluated the health of 122 inhabitants of a building on which base station antennas had been installed. Twenty-one suffered from chronic fatigue, 14 from dizziness or Ménière's disease, 14 from headaches, 17 from eye pain or infections, 14 from insomnia and 10 from chronic nosebleeds. Five months after the antennas were removed, only 2 cases of insomnia, 1 case of vertigo and 1 case of headaches remained!

This human rights emergency, which affects hundreds of millions of people on a planetary scale, and the environmental emergency that threatens the extinction of countless species of plants and animals must be faced with clear-sighted and unflinching resolution.